

## ATTACHMENT P

**2.5.20.6 Information To Be Submitted By Scheduling Coordinators For Each Service.** Scheduling Coordinators electing to self-provide Ancillary Services shall submit the information for each self provided Ancillary Service as described in Sections 2.5.14 to 2.5.17, excluding the capacity price information. ~~In place of the price information, Scheduling Coordinators self-providing Ancillary Services shall submit a Proxy Energy Bid which shall be used by the ISO to position the self provided resources in the merit order for real time Dispatch.~~ The ISO will verify and respond to submitted schedules in accordance with Appendix E and the ISO Protocols.

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**2.5.22.3 Ancillary Services Dispatch.** The ISO may dispatch Generating Units, Loads, System Units and System Resources contracted to provide Ancillary Services (either procured through the ISO's competitive market, or self provided by Scheduling Coordinators) to supply Imbalance Energy. If a Generating Unit, Load, System Unit or System Resource, which is supplying Operating Reserve, is dispatched to provide Imbalance Energy, the ISO shall replace the Operating Reserve from the same or another resource within the time frame specified in the WSCC guidelines.

**2.5.22.3.1 Dispatch of Competitively Procured and Self-Provided Ancillary Services.** Generating Units and Loads selected in the ISO competitive auction or self-provided shall be dispatched based on their Energy bid prices as described in their Ancillary Service schedule.

**2.5.22.3.2 Dispatch of Self Provided Ancillary Services.** Where a Scheduling Coordinator has chosen to self provide the whole of the additional Operating Reserve required to cover any Interruptible Imports which it has scheduled and has identified specific Generating Units, Loads, System Units or System Resources as the providers of the additional Operating Reserve concerned, the ISO shall Dispatch only the designated Generating Units, Loads, System Units or System Resources in the event of the ISO being notified that the Interruptible Import is being curtailed. For all other Ancillary Services which are being self provided the Proxy Energy Bid shall be used to determine the position of the Generating Unit, Load, System Unit or System

Resource in the merit order for real time Dispatch. ~~If the Proxy Energy Bid is higher than the highest Energy bid of the competitively procured Generating Units, Loads or System Resource, the self-provided Generating Unit, Load or System Resource shall be deemed to have a Dispatch price equal to the highest competitively bid Generating Unit, Load or System Resource. If the Proxy Energy Bid is lower than the lowest Energy price of a competitively bid Generating Unit, Load or System Resource, the self-provided Generating Unit, Load or System Resource shall be deemed to have a Dispatch price equal to the lowest Energy bid price of the competitively procured Generating Unit, Load or System Resource.~~

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**2.5.22.5 Information used in the Real Time Dispatch.** The ISO shall place all the bid price information (except for Regulation bid prices and Adjustment Bids carried forward from the Day-Ahead and Hour-Ahead Markets) received from available Generating Units, Loads, System Units and System Resources ~~(except for those specifically designated by a Scheduling Coordinator as backup capacity for Interruptible Imports and on-demand obligations under Section 2.5.22.3.2)~~ in a database for use in real time Dispatch of Balancing Energy.

The database shall indicate:

- (a) Generating Unit/\_Load/ System Unit/ System Resource name;
- (b) congestion zone;
- (c) quantity bid;
- (d) normal ramp rate;
- (e) price;
- (f) whether the Generating Unit/\_Load/ System Unit/ System Resource has been contracted to provide any Ancillary Services and/or Supplemental Energy, and, if so, which ones.

The quantity blocks shall be ordered in a merit order stack of ascending incremental and descending decremental price bids.

**2.5.22.6 Real Time Dispatch.** ~~Save as provided in Section 2.5.22.3.2,~~ the ISO shall select the least-cost Generating Unit, Load, System Unit or System Resource to meet Imbalance Energy requirements in real time. The ISO shall determine that additional output is needed if the current output levels of the Regulation Generating Units and System ~~UnitsResources~~ exceed their scheduled Set Points by more than a specified threshold (to be determined by the ISO). The ISO shall determine that less output is needed if the output levels of the Regulation Generating Units and System ~~UnitsResources~~ fall below their scheduled Set Points by more than a specified threshold (to be determined by the ISO). To minimize the cost of providing Imbalance Energy:

- (a) if additional Energy output, or Demand reduction, is needed, the ISO shall Dispatch additional output or reduce Demand from Generating Units, Loads, System Units or System Resources in ascending order of their incremental Supplemental Energy bid prices (or, for Generating Units, Loads, System Units and System Resources providing Ancillary Services, their Energy Bid ~~or Proxy Energy Bid~~ prices).
- (b) if the ISO is required to reduce Energy output from Generating Units, Loads, System Units or System Resources, the ISO shall dispatch down Generating Units, Loads, System Units and System Resources in descending order of their decremental Supplemental Energy bid prices (or, for Generating Units, Load, System Units and System Resources providing Ancillary Services their Energy Bid prices ~~or Proxy Energy Bid prices~~).

Once a bid has been accepted by the ISO, the database shall be adjusted to reflect the change in status of the bid. Once a decremental bid has been used by the ISO, it will then be included in the incremental part of the database with an incremental bid equal to its decremental price bid. Once an incremental bid has been used by the ISO it will then be included in the decremental part of the database with a decremental bid equal to its incremental price bid. In the event that the ISO subsequently needs to decrement output, it will initially decrement the Generating Units, Loads, System Units or System Resources incremented previously, and then continue down the merit order of the decremental bids.

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### 2.5.23 Pricing Imbalance Energy.

**2.5.23.1 General Principles.** Imbalance Energy shall be priced in two (2) time intervals using the Five Minute Ex Post Price and the Hourly Ex Post Price. The Five Minute Ex Post Price shall be based on the bid of the marginal Generating Units, Loads and System Resources dispatched by the ISO to reduce Demand or to increase or decrease Energy output in each five minute period (including resources that provide Imbalance Energy and Ancillary Services resources that increase or decrease Energy output or reduce Demand).

The marginal Generating Unit, Load or System Resource dispatched in the five (5) minute period is

- (a) if generation output is increased, or Demand reduced, the Generating Unit, Load or System Resource with the highest bid that is accepted by the ISO for incremental Generation, or Demand reduction; or
- (b) if generation output is decreased, the Generating Unit or System Resource with the lowest bid that is accepted by the ISO for decremental Generation.

~~Where a Scheduling Coordinator has identified specific Generating Units, Loads or System Resources as the providers of the additional Operating Reserve required to cover any Interruptible Imports and on-demand obligations which it has scheduled, the Proxy Energy Bid prices of those resources for the incremental Energy, or decremental Demand, dispatched by the ISO from the Operating Reserve provided by those resources, shall not be taken into account in the determination of the Hourly Ex-Post Price.~~

When an Inter-Zonal Interface is operated at the capacity of the interface (whether due to scheduled uses of the interface, or decreases in the capacity of the interface), the marginal incremental or decremental bid prices in some Zones may differ from one another. In such cases, the ISO will determine separate Hourly Ex Post Prices for the Zones.

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**2.5.25.1 Regulation.** The ISO shall continuously monitor the response of a Generating Unit or a System Unit to the ISO's Regulation instructions in order to determine compliance with Dispatch instructions.

**2.5.25.2 Spinning Reserve.** The ISO shall test the Spinning Reserve capability of a Generating Unit, System Unit or System Resource by issuing unannounced Dispatch instructions requiring the Generating Unit, System Unit-resource or System Resource to ramp up to its ten minute capability. The ISO shall measure the response of the Generating Unit, System Unit or System Resource to determine compliance with requirements. The Scheduling Coordinator for the Generating Unit, System Unit or System Resource shall be paid the Energy ~~bid or Proxy Energy~~ Bid price of the Generating Unit or System Unit for the output under the Spinning Reserve test.

**2.5.25.3 Non-Spinning Reserve.** The ISO may test the Non-Spinning Reserve capability of a Generating Unit, Load, System Unit or System Resource by issuing unannounced Dispatch instructions requiring the Generating Unit, Load, System Unit or System Resource to come on line and ramp up or to reduce Demand to its ten minute capability. The ISO shall measure the response of the Generating Unit, System Unit, System Resource or Load to determine compliance with requirements. The Scheduling Coordinator for the Generating Unit, System Unit, Load or System Resource shall be paid the Energy (or Demand reduction) ~~bid or Proxy Energy~~ Bid price of the Generating Unit, System Unit, Load or System Resource for its output or reduction, under the Non-Spinning Reserve test.

**2.5.25.4 Replacement Reserve.** The ISO may test the Replacement Reserve capability of a Generating Unit, Load, System Unit or System Resource by issuing unannounced Dispatch instructions requiring the Generating Unit, Load, System Unit or System Resource to come on line and ramp up or reduce Demand to its sixty minute capability. The ISO shall measure the response of the Generating Unit, Load, System Unit or System Resource to determine compliance with requirements. The Scheduling Coordinator for the Generating Unit, Load, System Unit or System Resource shall be paid the Energy or Demand reduction ~~bid or Proxy Energy~~ Bid price of the Generating Unit, Load, System Unit or System Resource for the output, or reduction, of the Generating Unit, Load, System Unit or System Resource under the Replacement Reserve test.

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**7.3.1.2 Calculation of Marginal Value of an Inter-Zonal Interface.** The marginal value of an Inter-Zonal Interface is the basis for the Usage Charge associated with the scheduled use of the Inter-Zonal Interface. This price is calculated from the Adjustment Bids of the Scheduling Coordinators and the ISO's computer optimization algorithms, using the procedures described in Section 7.2.

7.3.1.2.1 The price used to determine the Usage Charge will be the Day-Ahead price for those scheduling in the Day-Ahead Market, or the Hour-Ahead price for those Schedules submitted after the Day-Ahead Market closed.

7.3.1.2.2 The Day-Ahead prices are calculated based on the Adjustment Bids ~~(and proxy bids where relevant)~~ of the Scheduling Coordinators who participate in the Day-Ahead Market ~~(and, where applicable, the Energy Bids submitted to the ISO)~~. These Day-Ahead prices are used to calculate Usage Charges for Schedules accepted in the Day-Ahead Market.

7.3.1.2.3 The Hour-Ahead prices are calculated based on Adjustment Bids ~~(and proxy bids and Energy Bids where relevant)~~ submitted or otherwise still in effect after the Day-Ahead procedures have concluded. These prices are applied to all Schedules for the use of the Congested Inter-Zonal Interfaces that have been submitted and accepted after the ISO's Day-Ahead scheduling and Congestion Management have concluded.

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#### **ISO TARIFF APPENDIX A Master Definitions Supplement**

<b><u>Proxy Energy Bid</u></b>	<del>The price at which a Participating Generator, owner or operator of a Load or of a System Resource providing Regulation, Spinning Reserve, Non-Spinning Reserve, or Replacement Reserve capacity as part of an arrangement by a Scheduling Coordinator for self-provision of these services has agreed to provide the next increment of Energy or decrement of Demand.</del>
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#### **ISO TARIFF APPENDIX E Verification of Submitted Data for Ancillary Services**

##### **5. Treatment of Missing Values.**

5.1 **Missing Location Values.** Any bid submitted without a Location Code shall be deemed to have a zero bid quantity for that Settlement Period.

5.2 **Missing Quantity Values.** Any bid submitted without a quantity value shall be deemed to have a zero bid quantity for Ancillary Service capacity for that Settlement Period.

**5.3 Missing Price Values.** Any bid submitted with non-zero quantity value, but with a missing price value, shall be rejected. ~~Any schedule submitted without a proxy price value shall be deemed to have a proxy price of zero.~~